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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,346	11/20/2003	George A. Pavlath	NGC-153/000060-199	1241

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EXAMINER	
CHIEM, DINH D	
ART UNIT	**PAPER NUMBER**
2883	

DATE MAILED: 09/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/718,346	PAVLATH, GEORGE A.	
	Examiner	Art Unit	
	Erin D Chiem	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-23 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-23 is/are rejected.

7)☒ Claim(s) 11-12 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☑ The drawing(s) filed on 11-20-04 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 11-20-04
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 11, 12 recites the limitation "the first optical component" and "the second optical component in claim 11 line 2 and line 11. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 2 and 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The recitation of "wherein the one or more of the one or more long period Bragg gratings comprise one or more wavelength attenuation ranges that omit the substantially same first wavelength and comprise the substantially same second wavelength;" suggests that the applicant claims a perfect filter. The recitation of "that omits the ... first wavelength" implied that the claimed long period Bragg gratings may filter one singular wavelength. To a person having ordinary skill in the art, there is not such a perfect filter or it is impractical to manufacture such a filter.

Moreover, claims 2 and 6 contain enigmatic wording, for example, "omit the substantially same first wavelength". According to www.dictionary.com,

substantially

adv 1: to a great extent or degree;

Perhaps the applicant intended to use the word "substantially" to modify the verb "omit" and "comprise", respectively; otherwise, such usage of the word "substantially" renders the claim to be unclear.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 – 23 are confusing due to the "one or more of the one or more" recitation. The recitation could be clarified by using the recitation, for example "the subset of one ore more."

Concerning claim 2, due to the confusing recitations as mentioned above, the recitations refer back to the same subset of long period Bragg grating; therefore, applicants essentially repeated paragraph 2 in claim 2 as in claim 1. Similarly, claim 4 et seq. have repeating limitation for claim 1.

The above repetition creates many ambiguities in the claims that the applicant's claimed invention becomes diluted and it is unclear what the limitations are in the claims followed.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by **Vengsarkar (US 5,430,817)**. Regarding claim 1, Vengsarkar discloses an apparatus comprising one or more light sources coupled to a one or more long-period Bragg grating, and coupled to one or more amplification fibers, wherein the light source transmits a pump signal to a subset of the long-period Bragg gratings which further transmit to the amplification fibers. The amplification fibers absorb some of the signal and emit the rest of the signal to another subset of long-period Bragg gratings for attenuation. See **Figure 5**.

4. Regarding claim 2, the examiner takes the position that "the one or more of the one or more long-period Bragg gratings" recitation is repeating from claim 1; therefore, the repetition has been met by the teaching of Vengsarkar, as mentioned above. Furthermore, a system comprising of the elements of a pump light source and amplification fibers inherently exhibit the characteristics of producing different wavelengths as claimed by the applicant.

5. Regarding claim 3, the limitations are met by the reference because sub ranges are inherent in any grating based system.

6. Claim 1 and 4 – 15 and 17 – 23 are rejected under 35 U.S.C. 102(b) as being anticipated by **Michal (US 6,025,915)**.

7. Regarding claim 1, **Figure 5** discloses the limitations, where Michal further discloses element **222** can be a long period Bragg grating and element **250** is a bandpass filter in which Michal discloses may be employed by a long period Bragg grating.

8. Regarding claim 4, the limitations are met by the reference because applicant is claiming what is inherent to a system comprising pump light source, long period Bragg gratings, and amplification fibers. The transmission of "one or more residual signals" (claim 4 line 9) claimed by the applicant is merely describing the characteristics of amplification fibers. See **column 1 line 34 – 49**.

9. Regarding claim 5, the limitations are met in the reference. See **Figure 5**.

10. Regarding claim 6, applicant is claiming inherent characteristics of long-period Bragg gratings in optical fibers. An optical fiber with long-period Bragg grating in optical fibers comprises of a core and a cladding wherein the core couples to light signal to the cladding and attenuate the signal.

11. Regarding claim 7 and 8, Michal teaches the reduction of backreflection of output signals from the amplification fibers in **column 4 line 44-54**, also see **Figure 5**.

12. Regarding claim 9, the reference also discloses an optical component being an optical gyroscope. See **Figure 5**, element **258**.

13. Regarding claim 10, scale factor linearity error is an inherent characteristic of fiber optic gyroscope. In column 1 line 59 – column 2 line14, Michal describes

such characteristic. Furthermore, Michal teaches the reduction of this error by employing a long period Bragg grating. See **column 5 line 42 – 46**, **column 5 line 57 – 65**, and **Figure 7B**.

14. Regarding claim 11 and 12, due to the lack of antecedent basis and the recitation of "the one or more of the one or more" modifying different elements, for example, long period Bragg gratings, and residual signals, the examiner takes the position that will broadly interpret claim as having the different optical elements coupled to one another, this limitation is met by the reference, see **Figure 5.** As for the coupler, see **Figure 7a** element **300**.

15. Regarding claim 13, the reference discloses the broadband fiber source comprises of pump light source, long period Bragg gratings, and amplification fiber.

16. Regarding claim 14 and 15, amplification fibers made from erbium-doped fibers are well known in the art. And pump diode lasers are frequently used in the art as a pump light source. See Background of the Invention.

17. Regarding claim 17, applicant is being repetitive in claiming inherent characteristics of long period Bragg grating; therefore the repetitive claim has been met by the above reference.

18. Regarding claim 18, this limitation has been met as in claim 7 and 8 by the reference above.

19. Regarding claim 19, Michal discloses using long period Bragg grating as a double-pass broadband fiber source that promote reduction of backreflection and stabilizes the output signal. See column 4 line 49 – 59.

20. As for claim 20 –23, through disclosing the apparatus the scale factor stabilization of a broadband fiber source used in fiber optic gyroscopes, Michal teaches the method of promoting a reduction of backreflection of output signals from amplification fibers, hence stabilizing the signal that is being transmited to the fiber optic gyroscope. See column 4 line 2 – 7.

Claim Rejections - 35 USC § 103

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

22. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Michal (US 6,025,915)** in view of **Golberg, Lew et al (US 20020094159 A1)**.

23. Michal discloses long period Bragg gratings disposed coupled between pump light sources and amplification fibers, but Michal does not disclose fusion-spliced long period Bragg grating.

24. Goldberg, Lew et al. discloses the fabrication of a broadband pump source utilizing fusion splicing to couple the components together. See **paragraph 27, claim 31 – 41,** and **Figure 6b.**

25. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to apply fusion splicing as a method of coupling the pump light source, long period Bragg gratings, and amplification

fibers together for the purpose of reducing bend losses and mode mismatch losses that are inherent in optic fiber transmission.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin D Chiem whose telephone number is (571) 272-3102. The examiner can normally be reached on Monday - Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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